

No. 824,166.

PATENTED JUNE 26, 1906.

H. AIKEN.  
REVERSING VALVE.

APPLICATION FILED APR. 21, 1904.

Fig: 1.

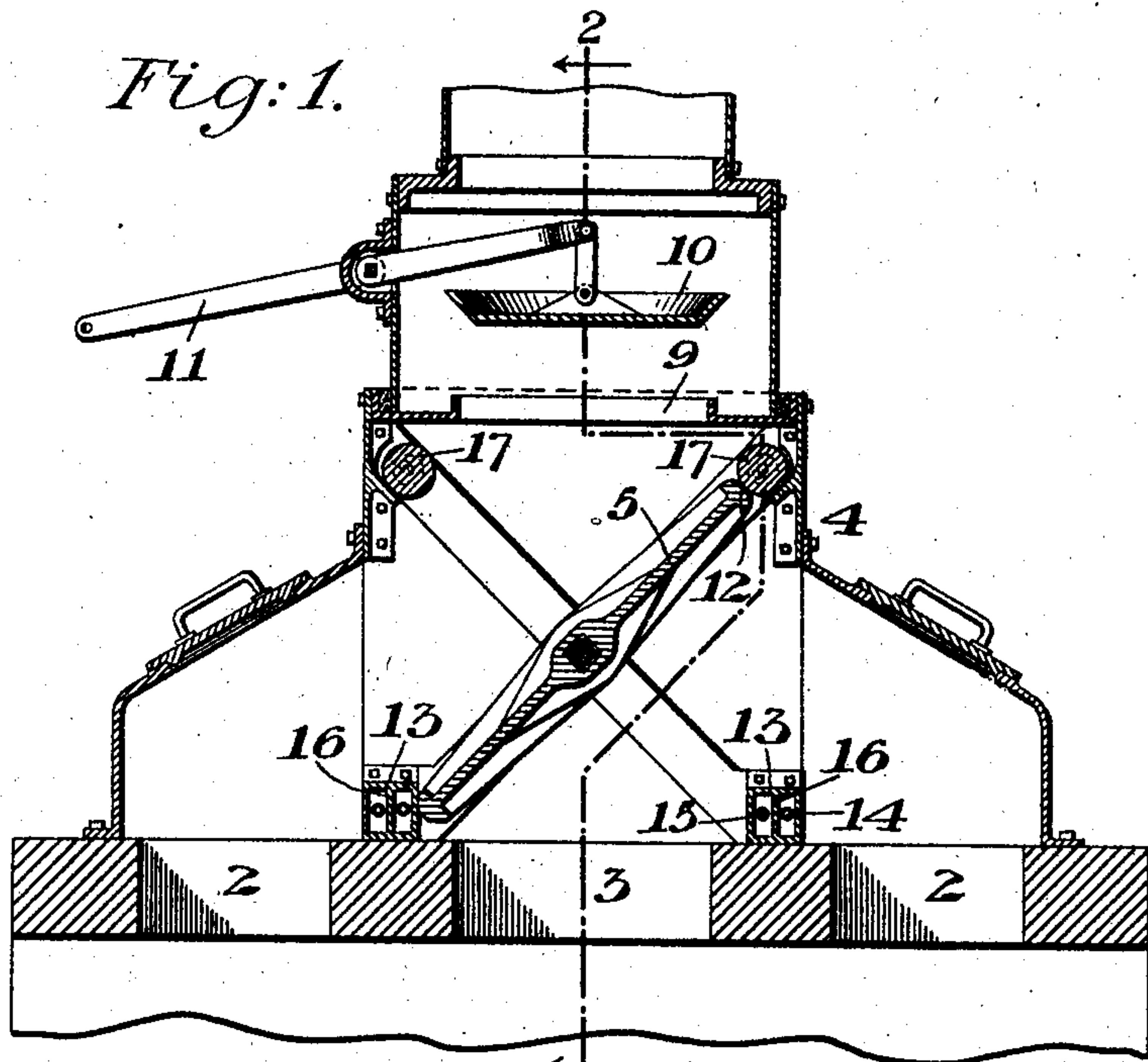


Fig: 2.

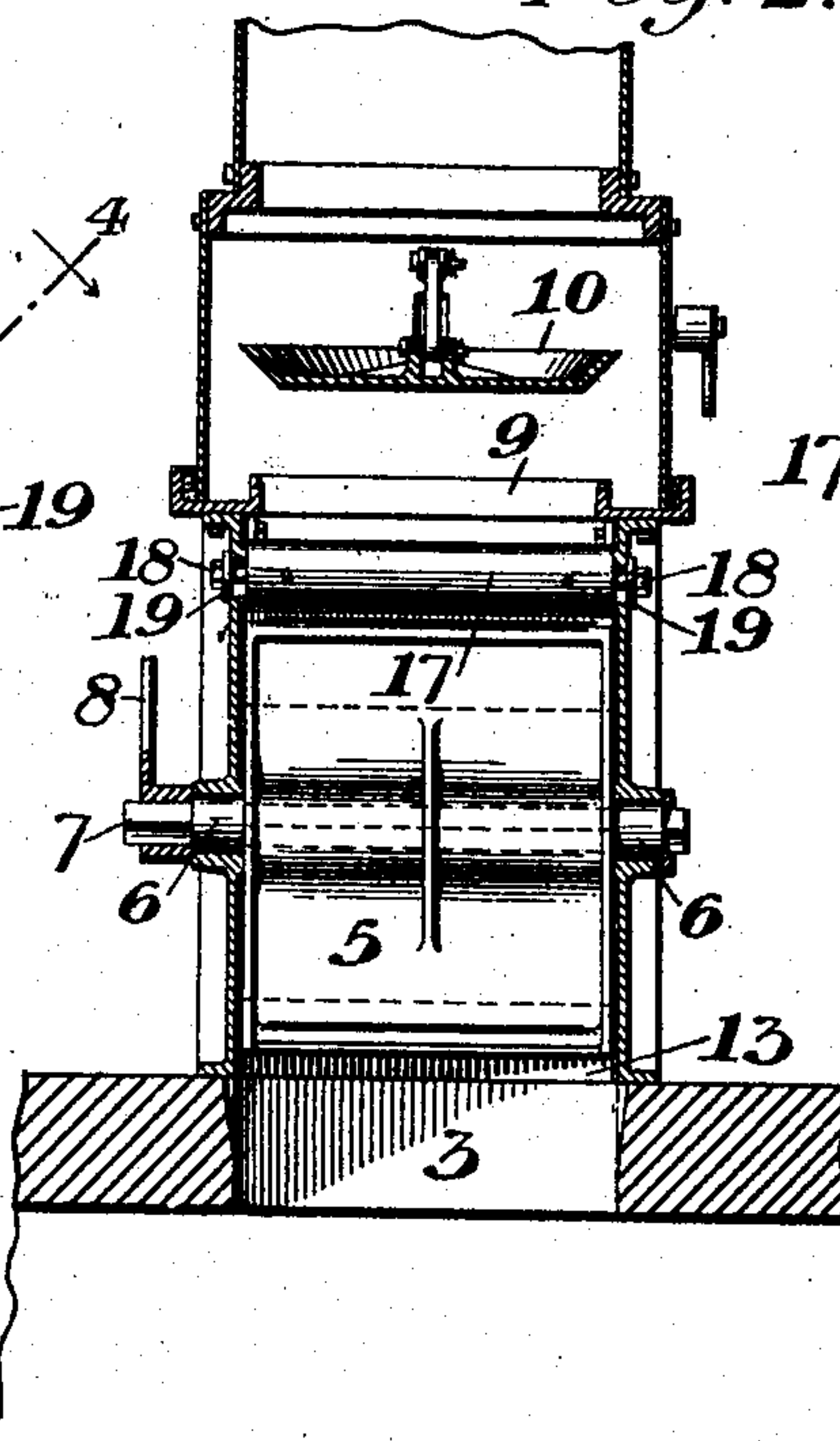


Fig: 3.

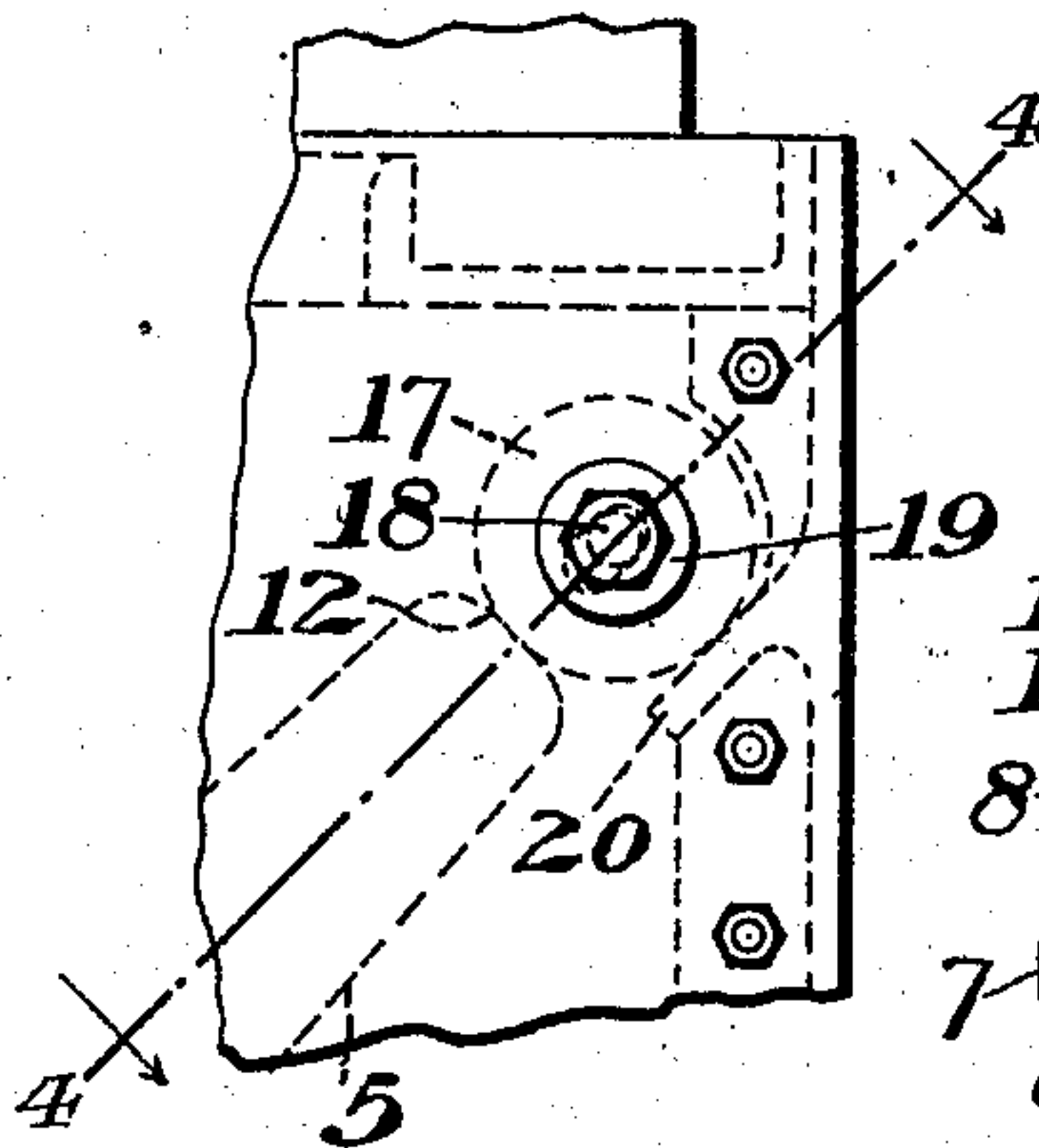
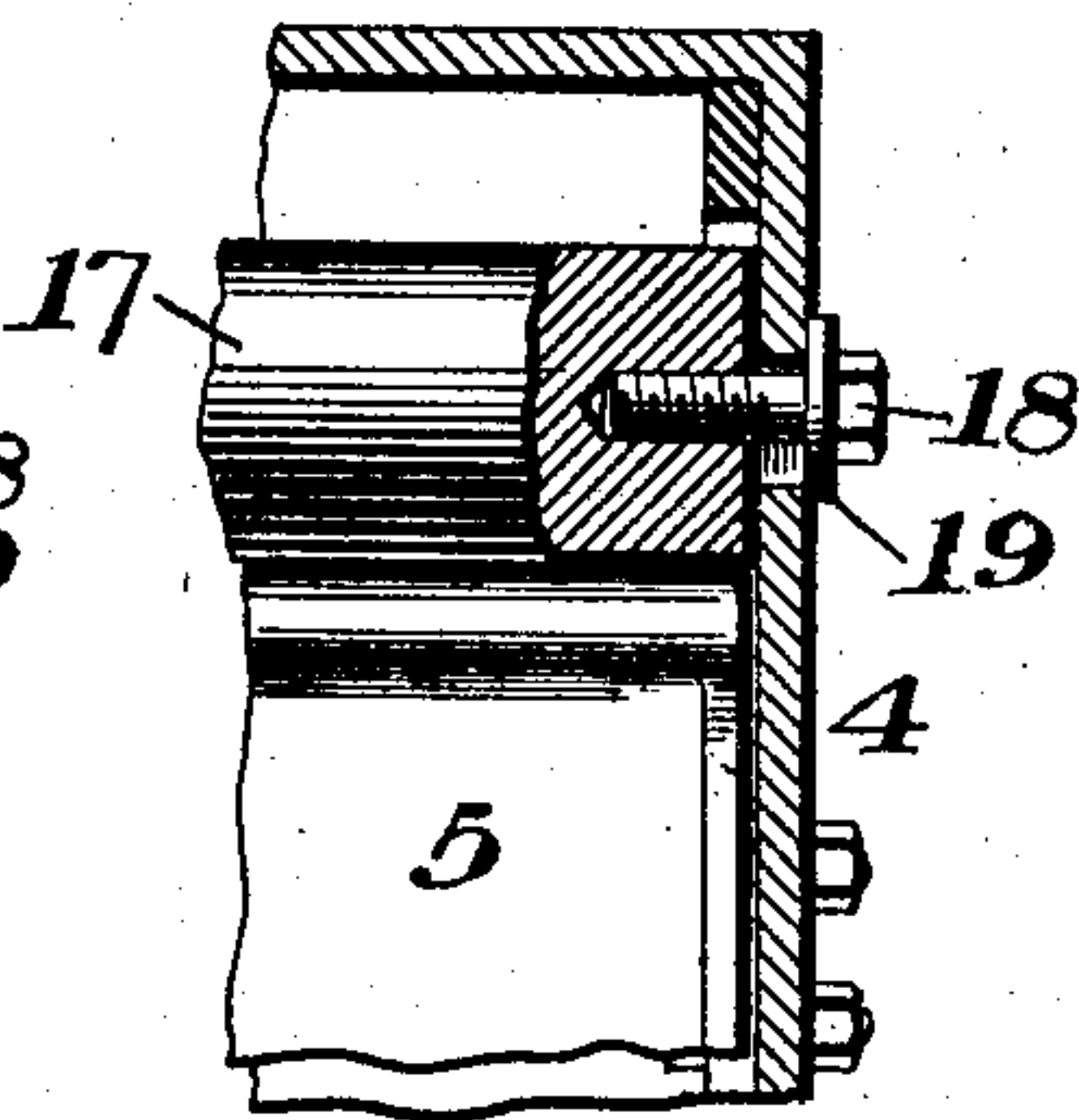


Fig: 4.



WITNESSES

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# UNITED STATES PATENT OFFICE.

HENRY AIKEN, OF PITTSBURG, PENNSYLVANIA.

## REVERSING-VALVE.

No. 824,166.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed April 21, 1904. Serial No. 204,211.

*To all whom it may concern:*

Be it known that I, HENRY AIKEN, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Reversing-Valve, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section showing the preferred form of my improved valve. Fig. 2 is a vertical section on the irregular line 2 2 of Fig. 1, and Figs. 3 and 4 are respectively a detail side elevation and broken cross-section showing the bearing of the sealing-roller.

My invention relates to the class of reversing-valves for regenerative furnaces, and more particularly to the butterfly type of valve, wherein an oscillating valve-plate controls the three generative ports.

The object of the invention is to prevent leakage of gas to the stack and to seal the valve in its respective positions.

In the drawings, 2 2 represent regenerator-ports, and 3 a stack-port between them, these being covered by a valve-casing 4, containing the butterfly-valve 5. This valve is hung up on oppositely-projecting trunnions 6 6, mounted in bearings in the sides of the casing and having a squared shaft 7, provided with operating-lever 8.

9 is the gas-inlet port, controlled by the valve 10, actuated by the externally-projecting lever 11.

The butterfly-valve is of ordinary form, except that its upper edge is preferably rounded off to give a convex form, as shown at 12. Instead of using stationary seats for the valve edges in the two positions I preferably lower stationary seats 13 for the lower edge of the valve, these seats preferably being water-cooled by inlet and outlet pipes 14 and 15, leading in on opposite sides of a central bevel 16.

The upper seats in the casing consist of rollers or sealing-pieces 17, which are arranged to rest by gravity upon the upper edge of the valve when in their adjusted position. Each roller may be mounted upon end tap-bolts 18, extending through slots in the casing and provided with covering-washers 19. The

slots allow movement of the roller toward and from the valve, and the parts are so arranged that as the valve swings to place its convex surface lifts the roller slightly, the roller then resting in contact with it by the action of gravity, when the lower edge of the valve is against the stationary seat. The rollers preferably rest upon inclined end ledges 20, as shown in Fig. 3, which guide and support the rollers in their sliding and rolling movements.

In the operation of the valve the butterfly is reversed in the usual manner, and as it moves to either adjusted position the lower edge seats against the stationary water-cooled seat, while the upper portion automatically lifts the roller and seats against it. Any variation in the length of the valve owing to the expansion or contraction under heat will thus be compensated for and a tight valve obtained.

The advantages of my invention result from the substantial preventing of leakage of the gas to the stack and the simplicity and cheapness of the valve. The unequal expansion of the two legs of the valve which has heretofore prevented proper seating does not interfere with the tight seating in my valve, since the movable roller compensates for any such changes.

Many variations may be made in the form and arrangement of the shifting seat and the other parts without departing from my invention.

I claim—

1. A butterfly reversing-valve having a shiftable gravitating seat arranged to rest yieldingly upon and seal the edge of the valve and guides for the said seat; substantially as described.

2. A butterfly reversing-valve having two automatically-shiftable loosely-gravitating seats arranged to rest upon one edge of the valve, and two stationary seats arranged to engage the opposite edge of the valve and guides upon which the seats move in shifting; substantially as described.

3. The combination with a butterfly reversing-valve, of a seat therefor, formed by a loose, gravitating, roller, arranged to be moved by the valve in seating; substantially as described.

4. A butterfly reversing-valve having a shifting roller-seat, the roller constituting such seat being arranged to be moved by contact with the edge of the valve in seating; substantially as described.

5. A reversing butterfly-valve having upper opposite rollers loosely mounted in the casing, the valve having convex upper edges arranged to shift the rollers which rest there-

on by gravity when the valve is in closed position; substantially as described.

In testimony whereof I have hereunto set my hand.

HENRY AIKEN.

Witnesses:

JOHN MILLER,  
H. M. CORWIN.